

**HB 834** — Electric Vehicle Charging Reliability Act  
Position: **Favorable**

March 2, 2023

Delegate C.T. Wilson  
Chair, House Economic Matters Committee  
House Office Building - Room 231  
Annapolis, MD 21401

Dear Chairman Wilson and Members of the Committee:

As an EV driver, BGE ratepayer, and frequent user of public EV charging stations, I offer this testimony in favor of HB 834, the Electric Vehicle Charging Reliability Act.

While the utilities' EV Pilot Program approved by the Maryland Public Service Commission has promised highly reliable public EV charging stations, the reality has fallen short.

When the EV Pilot program was proposed in 2018, BGE assured the Commission that their charging stations would be highly reliable and that they would respond quickly to resolve outages and issues. BGE said,

“We have a regulatory obligation to maintain the charging networks much like any other distribution asset that we have and this is going to avoid situations where you have prolonged EV charger outages due to a breakdown or some sort of vandalism or any sort of things that could befall one of these chargers.”<sup>1</sup>

Four years into the pilot, the high-reliability that was promised is not being delivered.

According to the recently finalized National Electric Vehicle Infrastructure (NEVI) program standards, “A charging port is considered ‘up’ when its hardware and software are both online and available for use, or in use, and the charging port successfully dispenses electricity in accordance with requirements for minimum power level.”<sup>2</sup>

In late August and early September, I drove to all 69 BGE-owned fast chargers and tested their functionality. Only 71% of them worked properly. The rest had issues including being completely dead, no network communication, error messages on the screen, physical damage to the connectors and greatly reduced power output. (See attached Comments to PSC - September 12, 2022)

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<sup>1</sup> BGE, Sept. 6, 2018. PSC video at 2:34:28 <https://youtu.be/iJsQMkpUBjA?t=9268>

<sup>2</sup> FHWA - National Electric Vehicle Infrastructure Standards and Requirements [https://www.fhwa.dot.gov/environment/nevi/resources/ev\\_charging\\_min\\_std\\_rule\\_fr.pdf](https://www.fhwa.dot.gov/environment/nevi/resources/ev_charging_min_std_rule_fr.pdf)

In November I repeated the testing. The percentage of fully functional chargers had declined from 71% to 65%. Many of the issues were the same as I had encountered two months earlier. I documented the issues and sent a detailed report to BGE. (See attached Appendix A)

This situation raises questions about accountability to ratepayers, given that the cost of the EV charging pilot program is passed on to ratepayers, whether they drive an EV or not.

Additionally, the utilities are losing money on the charging stations. For example, the BGE chargers in Gott's Garage in Annapolis lost \$3,692.13 in the second half of 2022 alone.<sup>3</sup> That figure only factors the cost of electricity. (See attached Appendix J)

The Profit/Loss statement in Appendix J does not take into account recovering capital costs, monthly networking fees, nor maintenance and repair costs.

To encourage Maryland drivers to switch to EVs, the charging infrastructure must be affordable, convenient, and reliable. The utilities and other recipients of public funding must be transparent and accountable for how these funds are being used.

I commend the sponsor of this bill, Delegate Fraser-Hidalgo, for his leadership in promoting clean transportation and his foresight in addressing the challenges as Maryland moves toward an electric-driven future.

In conclusion, I urge a **favorable report** on House Bill 834.

Sincerely,

A handwritten signature in cursive script that reads "Lanny Hartmann".

Lanny Hartmann  
Columbia, Maryland

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<sup>3</sup> BGE EV Pilot Semi-Annual Report to PSC dated Feb. 1, 2023, Appendix J

# Appendix J

## Profit/loss at each public charging site

<i>Truxtun Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	2003	5378
Charging Station Revenue	\$359.24	\$961.30
Charging Station Bill	(\$403.80)	(\$1,307.25)
Profit/(Loss)	(\$44.56)	(\$345.95)

<i>Gott's Court Garage - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	9778	21508
Charging Station Revenue	\$1,990.83	\$4,238.36
Charging Station Bill	(\$5,682.96)	(\$11,466.55)
Profit/(Loss)	(\$3,692.13)	(\$7,228.19)

<i>Carroll County Commissioners - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	3961	13538
Charging Station Revenue	\$1,234.28	\$3,940.44
Charging Station Bill	(\$859.11)	(\$3,105.07)
Profit/(Loss)	\$375.17	\$835.37

<i>John R Hargrove DC/MSC - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	769	1324
Charging Station Revenue	\$232.58	\$372.79
Charging Station Bill	(\$2,856.97)	(\$5,132.61)
Profit/(Loss)	(\$2,624.39)	(\$4,759.82)

<i>Aberdeen City Center - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	747	2737
Charging Station Revenue	\$132.46	\$487.95
Charging Station Bill	(\$215.53)	(\$1,030.09)
Profit/(Loss)	(\$83.07)	(\$542.13)

<i>Crofton Library - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	6450	10414
Charging Station Revenue	\$1,157.99	\$1,853.94
Charging Station Bill	(\$1,079.66)	(\$1,809.33)
Profit/(Loss)	\$78.33	\$44.61

<i>HCLS Miller Branch - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	8398	19760
Charging Station Revenue	\$1,736.22	\$4,931.96
Charging Station Bill	(\$4,733.34)	(\$16,793.34)
Profit/(Loss)	(\$2,997.12)	(\$11,861.38)

<i>100 Community Place - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	2239	5515
Charging Station Revenue	\$581.10	\$1,547.05
Charging Station Bill	(\$5,737.80)	(\$11,254.84)
Profit/(Loss)	(\$5,156.70)	(\$9,707.79)

<i>Carroll County Community College - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	825	3975
Charging Station Revenue	\$148.41	\$707.74
Charging Station Bill	(\$239.77)	(\$1,133.47)
Profit/(Loss)	(\$91.36)	(\$425.73)

<i>BWI - Rideshare Staging Lot - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	38110	66896
Charging Station Revenue	\$12,957.20	\$22,716.83
Charging Station Bill	(\$18,355.26)	(\$27,701.88)
Profit/(Loss)	(\$5,398.06)	(\$4,985.05)

<i>Eldersburg Branch Library - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	2347	7923
Charging Station Revenue	\$422.10	\$1,410.69
Charging Station Bill	(\$464.79)	(\$1,691.41)
Profit/(Loss)	(\$42.69)	(\$280.72)

<i>Bowie City Hall - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	14104	22139
Charging Station Revenue	\$3,866.92	\$5,809.01
Charging Station Bill	(\$7,448.17)	(\$12,788.01)
Profit/(Loss)	(\$3,581.25)	(\$6,979.00)

<i>Michael E. Busch Annapolis Library - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	8066	16361
Charging Station Revenue	\$1,913.25	\$3,728.28
Charging Station Bill	(\$5,529.68)	(\$14,932.21)
Profit/(Loss)	(\$3,616.43)	(\$11,203.93)

<i>Drumcastle Government Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	16714	22053
Charging Station Revenue	\$5,323.85	\$6,941.36
Charging Station Bill	(\$7,986.27)	(\$13,051.45)
Profit/(Loss)	(\$2,662.42)	(\$6,110.09)

<i>Ripken Stadium - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	5096	21829
Charging Station Revenue	\$1,262.31	\$4,721.09
Charging Station Bill	(\$5,658.05)	(\$22,203.08)
Profit/(Loss)	(\$4,395.74)	(\$17,481.99)

<i>BCPL Cockeysville Branch - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	19518	27960
Charging Station Revenue	\$5,675.41	\$8,363.19
Charging Station Bill	(\$8,709.28)	(\$14,166.62)
Profit/(Loss)	(\$3,033.87)	(\$5,803.43)

<i>North Carroll Branch Library - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	370	784
Charging Station Revenue	\$66.37	\$141.23
Charging Station Bill	(\$84.61)	(\$417.35)
Profit/(Loss)	(\$18.24)	(\$276.12)

<i>580 Taylor Ave - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	1873	2211
Charging Station Revenue	\$336.15	\$396.88
Charging Station Bill	(\$366.30)	(\$528.35)
Profit/(Loss)	(\$30.15)	(\$131.47)

<i>HCLS Savage Branch - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	6864	22678
Charging Station Revenue	\$1,230.81	\$4,042.90
Charging Station Bill	(\$1,219.66)	(\$3,651.01)
Profit/(Loss)	\$11.15	\$391.89

<i>Honeygo Run Regional Park - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	6864	13383
Charging Station Revenue	\$1,825.55	\$3,452.12
Charging Station Bill	(\$4,460.39)	(\$7,746.28)
Profit/(Loss)	(\$2,634.84)	(\$4,294.16)

<i>Havre De Grace P&amp;R - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	264	2391
Charging Station Revenue	\$47.54	\$409.31
Charging Station Bill	(\$174.14)	(\$966.29)
Profit/(Loss)	(\$126.60)	(\$556.98)

<i>DHR Harford DSS - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	14202	16152
Charging Station Revenue	\$2,780.39	\$3,142.62
Charging Station Bill	(\$6,400.58)	(\$8,021.17)
Profit/(Loss)	(\$3,620.19)	(\$4,878.55)

<i>Havre De Grace City Hall - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	5302	9845
Charging Station Revenue	\$1,530.53	\$2,626.39
Charging Station Bill	(\$4,323.55)	(\$12,098.34)
Profit/(Loss)	(\$2,793.02)	(\$9,471.95)

<i>Park Place Garage - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	8436	12397
Charging Station Revenue	\$1,712.34	\$2,514.75
Charging Station Bill	(\$5,551.76)	(\$8,771.00)
Profit/(Loss)	(\$3,839.42)	(\$6,256.25)

<i>Harford County Admin Office - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	1254	7361
Charging Station Revenue	\$426.29	\$2,500.73
Charging Station Bill	(\$3,484.48)	(\$14,682.67)
Profit/(Loss)	(\$3,058.19)	(\$12,181.94)

<i>Sandy Point Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	345	468
Charging Station Revenue	\$62.16	\$84.26
Charging Station Bill	(\$180.70)	(\$292.22)
Profit/(Loss)	(\$118.54)	(\$207.96)

<i>Veronica Chenoweth Activity Center - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	129	448
Charging Station Revenue	\$23.15	\$80.07
Charging Station Bill	(\$174.32)	(\$759.86)
Profit/(Loss)	(\$151.17)	(\$679.79)

<i>South Carroll Senior Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	736	1201
Charging Station Revenue	\$195.19	\$338.86
Charging Station Bill	(\$1,746.08)	(\$3,013.71)
Profit/(Loss)	(\$1,550.89)	(\$2,674.85)

<i>Ascend One Building - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	4353	11975
Charging Station Revenue	\$1,285.04	\$3,481.22
Charging Station Bill	(\$4,613.01)	(\$15,946.95)
Profit/(Loss)	(\$3,327.97)	(\$12,465.73)

<i>MDOT SHA Office - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	1461	1746
Charging Station Revenue	\$417.62	\$507.20
Charging Station Bill	(\$3,087.12)	(\$3,934.14)
Profit/(Loss)	(\$2,669.50)	(\$3,426.94)

<i>HCLS Glenwood Branch - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	4768	12854
Charging Station Revenue	\$1,405.70	\$3,745.36
Charging Station Bill	(\$4,359.00)	(\$17,768.07)
Profit/(Loss)	(\$2,953.30)	(\$14,022.71)

<i>State Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	6193	6694
Charging Station Revenue	\$1,092.03	\$1,182.26
Charging Station Bill	(\$2,748.50)	(\$3,233.31)
Profit/(Loss)	(\$1,656.47)	(\$2,051.05)

<i>Finksburg Branch Library - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	2406	6318
Charging Station Revenue	\$561.17	\$1,571.00
Charging Station Bill	(\$3,214.69)	(\$11,393.83)
Profit/(Loss)	(\$2,653.52)	(\$9,822.83)

<i>Harford Community College Lot C - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	791	1249
Charging Station Revenue	\$141.90	\$224.25
Charging Station Bill	(\$211.33)	(\$338.15)
Profit/(Loss)	(\$69.43)	(\$113.90)

<i>WSSC HQ - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	690	1651
Charging Station Revenue	\$124.17	\$295.64
Charging Station Bill	(\$213.66)	(\$721.73)
Profit/(Loss)	(\$89.49)	(\$426.09)

<i>Leon Day Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	0	81
Charging Station Revenue	\$0.00	\$14.53
Charging Station Bill	(\$96.51)	(\$178.86)
Profit/(Loss)	(\$96.51)	(\$164.33)

<i>HCLS Central - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	5920	23142
Charging Station Revenue	\$1,062.19	\$4,127.39
Charging Station Bill	(\$985.99)	(\$3,548.18)
Profit/(Loss)	\$76.20	\$579.21

<i>Harford Community College Lot J - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	248	327
Charging Station Revenue	\$44.66	\$58.77
Charging Station Bill	(\$132.83)	(\$195.88)
Profit/(Loss)	(\$88.17)	(\$137.11)

<i>North Arundel Aquatic Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	3867	8467
Charging Station Revenue	\$1,194.68	\$2,431.79
Charging Station Bill	(\$4,022.93)	(\$11,901.41)
Profit/(Loss)	(\$2,828.25)	(\$9,469.62)

<i>Harford Community College Lot T - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	631	757
Charging Station Revenue	\$111.20	\$133.96
Charging Station Bill	(\$221.51)	(\$288.91)
Profit/(Loss)	(\$110.31)	(\$154.95)

<i>Hampstead Municipal Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	768	2932
Charging Station Revenue	\$138.38	\$511.80
Charging Station Bill	(\$226.93)	(\$824.74)
Profit/(Loss)	(\$88.55)	(\$312.94)

<i>89 Northwest St - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	2110	2595
Charging Station Revenue	\$379.56	\$466.94
Charging Station Bill	(\$428.18)	(\$497.08)
Profit/(Loss)	(\$48.62)	(\$30.14)

<i>Public Service Building - Glen Burnie Garage - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	660	4414
Charging Station Revenue	\$211.24	\$1,251.33
Charging Station Bill	(\$1,708.76)	(\$9,798.59)
Profit/(Loss)	(\$1,497.52)	(\$8,547.26)

<i>Harford Community College Lot A - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	1539	1743
Charging Station Revenue	\$335.78	\$379.90
Charging Station Bill	(\$1,851.93)	(\$2,129.26)
Profit/(Loss)	(\$1,516.15)	(\$1,749.36)

<i>Randallstown Community Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	22833	37435
Charging Station Revenue	\$7,136.77	\$11,589.97
Charging Station Bill	(\$9,340.41)	(\$18,893.03)
Profit/(Loss)	(\$2,203.64)	(\$7,303.06)

<i>Westminster Senior Center - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	357	427
Charging Station Revenue	\$61.42	\$74.09
Charging Station Bill	(\$179.77)	(\$213.58)
Profit/(Loss)	(\$118.35)	(\$139.49)

<i>Broadneck High School - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	3098	8968
Charging Station Revenue	\$776.32	\$2,122.48
Charging Station Bill	(\$3,629.69)	(\$10,486.98)
Profit/(Loss)	(\$2,853.37)	(\$8,364.50)

<i>2660 Riva Rd - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	1629	2078
Charging Station Revenue	\$322.93	\$408.09
Charging Station Bill	(\$3,443.02)	(\$3,660.41)
Profit/(Loss)	(\$3,120.09)	(\$3,252.32)

<i>Essex Park and Ride - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	2771	4546
Charging Station Revenue	\$496.50	\$812.59
Charging Station Bill	(\$574.92)	(\$1,082.92)
Profit/(Loss)	(\$78.42)	(\$270.33)

<i>Roger Carter Community Center - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	808	959
Charging Station Revenue	\$136.98	\$162.72
Charging Station Bill	(\$232.77)	(\$259.44)
Profit/(Loss)	(\$95.79)	(\$96.72)

<i>Howard Community College - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	11595	26233
Charging Station Revenue	\$3,112.35	\$6,678.16
Charging Station Bill	(\$6,369.13)	(\$15,512.78)
Profit/(Loss)	(\$3,256.78)	(\$8,834.62)

<i>MDA HQ - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	1077	1132
Charging Station Revenue	\$274.03	\$284.08
Charging Station Bill	(\$2,474.38)	(\$2,474.38)
Profit/(Loss)	(\$2,200.35)	(\$2,190.30)

<i>Arbutus Library and Senior Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	7332	16520
Charging Station Revenue	\$2,218.35	\$4,907.02
Charging Station Bill	(\$5,118.66)	(\$13,788.51)
Profit/(Loss)	(\$2,900.31)	(\$8,881.49)

<i>Public Safety Building - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	182	182
Charging Station Revenue	\$32.65	\$32.65
Charging Station Bill	(\$68.78)	(\$68.78)
Profit/(Loss)	(\$36.13)	(\$36.13)

<i>Ellicott City Courthouse Lot - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	6351	13674
Charging Station Revenue	\$1,689.66	\$3,464.23
Charging Station Bill	(\$4,869.18)	(\$11,868.23)
Profit/(Loss)	(\$3,179.52)	(\$8,404.00)

<i>Ellicott City DC/MSC - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	210	210
Charging Station Revenue	\$37.43	\$37.43
Charging Station Bill	(\$132.41)	(\$132.41)
Profit/(Loss)	(\$94.98)	(\$94.98)

<i>Whitmore Garage - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	260	3748
Charging Station Revenue	\$49.21	\$809.03
Charging Station Bill	(\$1,082.78)	(\$6,898.26)
Profit/(Loss)	(\$1,033.57)	(\$6,089.23)

<i>Westminster DC/MSC - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	652	652
Charging Station Revenue	\$117.28	\$117.28
Charging Station Bill	(\$183.30)	(\$183.30)
Profit/(Loss)	(\$66.02)	(\$66.02)

<i>Eastport Annapolis Library - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	3652	7721
Charging Station Revenue	\$917.57	\$1,798.91
Charging Station Bill	(\$4,358.91)	(\$11,039.59)
Profit/(Loss)	(\$3,441.34)	(\$9,240.68)

<i>Glen Burnie DC/MSC - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	116	116
Charging Station Revenue	\$20.82	\$20.82
Charging Station Bill	(\$68.78)	(\$68.78)
Profit/(Loss)	(\$47.96)	(\$47.96)

<i>Carney Park and Ride - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	72	2281
Charging Station Revenue	\$12.99	\$410.58
Charging Station Bill	(\$121.03)	(\$653.66)
Profit/(Loss)	(\$108.04)	(\$243.08)

<i>Abingdon Park &amp; Ride - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	246	246
Charging Station Revenue	\$44.25	\$44.25
Charging Station Bill	(\$82.76)	(\$82.76)
Profit/(Loss)	(\$38.51)	(\$38.51)

<i>Meadowood Regional Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	1997	5830
Charging Station Revenue	\$359.68	\$1,043.70
Charging Station Bill	(\$408.67)	(\$1,091.27)
Profit/(Loss)	(\$48.99)	(\$47.57)

<i>Reisterstown Senior Center - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	549	549
Charging Station Revenue	\$98.79	\$98.79
Charging Station Bill	(\$108.04)	(\$108.04)
Profit/(Loss)	(\$9.25)	(\$9.25)

<i>Chesapeake Beach - Kellam's Field - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	2702	7823
Charging Station Revenue	\$784.11	\$2,315.61
Charging Station Bill	(\$3,886.66)	(\$8,970.30)
Profit/(Loss)	(\$3,102.55)	(\$6,654.69)

<i>Sollers Multi-Purpose Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	3670	5475
Charging Station Revenue	\$1,168.04	\$1,711.27
Charging Station Bill	(\$4,109.42)	(\$9,349.81)
Profit/(Loss)	(\$2,941.38)	(\$7,638.54)

<i>Essex-Rosedale DC/MSC - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	3370	8064
Charging Station Revenue	\$1,143.97	\$2,735.87
Charging Station Bill	(\$3,720.45)	(\$10,105.28)
Profit/(Loss)	(\$2,576.48)	(\$7,369.41)

<i>BWI - Cell Phone Lot - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	8999	18240
Charging Station Revenue	\$3,058.02	\$6,196.29
Charging Station Bill	(\$9,485.23)	(\$22,669.81)
Profit/(Loss)	(\$6,427.21)	(\$16,473.52)

<i>Odenton Library - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	1628	5468
Charging Station Revenue	\$291.96	\$968.53
Charging Station Bill	(\$354.54)	(\$752.91)
Profit/(Loss)	(\$62.58)	\$215.62

<i>Sykesville City Hall - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	7679	27311
Charging Station Revenue	\$2,422.53	\$7,953.69
Charging Station Bill	(\$4,991.15)	(\$8,253.54)
Profit/(Loss)	(\$2,568.62)	(\$299.85)

<i>Maryland Zoo - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	1678	4040
Charging Station Revenue	\$302.18	\$724.53
Charging Station Bill	(\$427.81)	(\$1,018.44)
Profit/(Loss)	(\$125.63)	(\$293.91)

<i>Edward F. Borgerding DC/MSC - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	1047	3230
Charging Station Revenue	\$188.41	\$581.31
Charging Station Bill	(\$270.50)	(\$689.49)
Profit/(Loss)	(\$82.09)	(\$108.18)

<i>City of Bowie - Kenhill Center - Controlling Sch GL</i>	Reporting Cycle	Program to date
kWh	1358	5232
Charging Station Revenue	\$425.15	\$1,432.04
Charging Station Bill	(\$2,983.28)	(\$8,017.60)
Profit/(Loss)	(\$2,558.13)	(\$6,585.56)

<i>BCPL Perry Hall Branch - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	93	93
Charging Station Revenue	\$16.64	\$16.64
Charging Station Bill	(\$54.76)	(\$54.76)
Profit/(Loss)	(\$38.12)	(\$38.12)

<i>Saw Mill Creek Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	62	62
Charging Station Revenue	\$11.11	\$11.11
Charging Station Bill	(\$527.28)	(\$527.28)
Profit/(Loss)	(\$516.17)	(\$516.17)

<i>BCPL Reisterstown Branch - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	144	144
Charging Station Revenue	\$26.01	\$26.01
Charging Station Bill	(\$13.60)	(\$13.60)
Profit/(Loss)	\$12.41	\$12.41

<i>Pal Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	474	474
Charging Station Revenue	\$85.07	\$85.07
Charging Station Bill	(\$13.60)	(\$13.60)
Profit/(Loss)	\$71.47	\$71.47

<i>Jacksonville Senior Center - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	250	250
Charging Station Revenue	\$44.94	\$44.94
Charging Station Bill	(\$32.24)	(\$32.24)
Profit/(Loss)	\$12.70	\$12.70

<i>Brooklyn Park Health Services - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	31	31
Charging Station Revenue	\$5.50	\$5.50
Charging Station Bill	(\$271.36)	(\$271.36)
Profit/(Loss)	(\$265.86)	(\$265.86)

<i>Middle Branch Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	58	58
Charging Station Revenue	\$10.44	\$10.44
Charging Station Bill	\$0.00	\$0.00
Profit/(Loss)	\$10.44	\$10.44

<i>Arden on the Severn Park - Controlling Sch G</i>	Reporting Cycle	Program to date
kWh	0	0
Charging Station Revenue	\$0.00	\$0.00
Charging Station Bill	\$0.00	\$0.00
Profit/(Loss)	\$0.00	\$0.00

September 12, 2022

Andrew S. Johnston  
Executive Secretary  
Public Service Commission of Maryland  
6 Saint Paul Street, 16th Floor  
Baltimore, Maryland 21202

**Re: Case No. 9478 - Baltimore Gas and Electric Company (BGE) Semi-Annual EV Pilot Program Progress Report for January 1, 2022 through June 30, 2022.**

Dear Mr. Johnston,

I respectfully submit the following comments regarding the Baltimore Gas and Electric Company EV program semi-annual report in Case No. 9478 that was filed on August 1, 2022.

### **Introduction**

In their semi-annual EV pilot program progress reports to the Commission, the utilities claim to have accomplished a very high degree of public charging station "uptime." In general, EV drivers have become skeptical of uptime claims on CCS and CHAdeMO public charging stations. There seems to be a disconnect between the impossibly high percentages of uptime presented to regulators and media vs the frequency that EV drivers encounter broken chargers in the real world.

Included in these comments is a summary of a survey of the operational status of all 69 BGE-owned public DC fast chargers in the pilot. Each fast charger was evaluated by driving to the charger, plugging in and, taking note of whether the payment system, screen, connectors, communication signal and charging equipment functioned as expected.

### **Background**

The Public Service Commission of Maryland approved a suite of utility-administered EV charging pilot programs in Order No. 88997 issued on January 14, 2019. The 2019 EV Order included a public charging component for the Investor-Owned Utilities including BGE.

BGE assured the Commission that their public EV charging stations would be highly reliable and that they would respond quickly to resolve outages and issues.

The BGE semi-annual report states that their public charging network had 95% uptime. BGE defines uptime as “the percent of time a station is in cellular communication and able to dispense a charge or is actively dispensing a charge.” If “unknown” time is treated as uptime, then BGE says that their reliability would rise to 99%

BGE is not alone among charging providers in claiming a high level of reliability. EVgo, a national EV charging service provider, claims to have 98% uptime across their network.

Despite these cheerful statistics, EV drivers continue to be plagued by broken charging stations. The issue of broken chargers has gotten some high-profile press attention in recent weeks:

*“Owners of battery-powered cars sometimes struggle to refuel on longer trips because public chargers don’t work.”* New York Times - Aug. 16, 2022<sup>1</sup>

*“EV owners continue to be faced with charging station equipment that is inoperable.”*  
Detroit Free Press - Aug. 17, 2022<sup>2</sup>

*“Charging stations in Washington, D.C., are often unavailable, broken or have cut cords”*  
NBC News 4 Washington - Sept. 7, 2022<sup>3</sup>

Automotive journalist Jonathan Gitlin recently suggested that if drivers continue to have these horrible experiences with EV charging, it could stall the adoption of electric vehicles.<sup>4</sup>

We must acknowledge and come to grips with these issues as a first step to solving them.

## **BGE Territory-Wide Charger Evaluation**

### **-Rationale**

I have been a proponent of electric vehicles for more than a decade. Eight years ago, we took the first of many long trips across the US in an electric car using what was, at the time, a new network of strategically placed Tesla Superchargers. Since that 2014 coast-to-coast electric road trip, my wife and I have driven to – and charged in – every state except Alaska and Hawaii. Along the way we have visited more than 900 Tesla Supercharger locations.<sup>5</sup>

Tesla Superchargers are extraordinarily dependable. We almost never have an issue with them. We also use other fast charging stations with a Tesla-to-CHAdeMO adapter. The non-Tesla fast chargers can be extremely frustrating. Until recently, nobody has quantified just how many of these chargers are operational and how many are not.

In April, Professor David Rempel of the University of California, Berkeley published a study<sup>6</sup> on the reliability of the public (non-Tesla) electric vehicle fast chargers in the San Francisco Bay Area. The results showed that more than a quarter of the chargers in that area were not functioning or had a design failure. The non-functioning stations suffered from non-responsive displays, payment system failures, initiation failures, network failures, or damaged connectors.

The study utilized a group of volunteer EV drivers who visited the chargers and tested each one by plugging into their EV and attempting to charge for two minutes. The methods used in the Berkeley study inspired the procedure that I used to test the fast chargers in Maryland.

#### **-Procedure**

69 BGE-owned fast chargers were tested between August 28 and September 6, 2022. I put the names and locations of all the BGE public charging stations into a spreadsheet. I then filtered the list to include only the DC fast chargers that have been built under the Maryland PSC EV pilot program. I then created a map of those locations and divided them into manageable groups that I could visit and evaluate over a number of days.

I drove to each site and worked through a checklist of tasks to test each fast charger. First I took a series of photos of the chargers. Then I recorded the Station ID, model and serial number of each unit. I visually inspected the equipment including the display, cables and connectors for damage. I documented the online status of the charger in the Shell Recharge mobile app. Then I attempted to initiate a charge via the app. If the unit began charging, I let it run for two minutes. Meanwhile I took note of the charging speed and made sure that the charger was operating as expected. After two minutes, I'd stop the charge and then attempt to initiate a charge using the RFID card reader. If a charging session failed, I'd report it to Shell Recharge customer service via the app or I'd call if the issue seemed as if it was possible to fix remotely.

## **-Results**

A charger was classified as fully functional if it authorized via the Shell Recharge app (or started free), initiated a charge, and maintained the expected charging speed for two minutes.

**71%** (49) of the BGE fast chargers were fully functional as defined above.

**14.5%** (10) of the chargers were completely inoperable.

**2.9%** (2) consistently displayed error codes and would not charge.

**4.4%** (3) were offline and did not respond via the app. However, these did initiate via a tap of a Shell Recharge RFID card. Most drivers however do not carry a Shell Recharge card.

**7.2%** (5) initiated a charge but delivered very low power, around 15 kW. That is a fraction of the 50 kW rated power for those stations.

## **-Payment Methods**

The payment methods tested were the Shell Recharge mobile app and the Shell Recharge RFID card. The BGE chargers do not have functioning credit card readers. The RFID card requires a \$5.00 payment and is delivered by mail. Due to the advance arrangements required to acquire an RFID card, I focused mainly on the mobile app to determine payment authentication success.

## **-Charger Models**

The chargers used in the BGE public charging pilot to date come from three different manufacturers and consist of four models. The table below shows the number of chargers of each model tested and how many were classified as fully functional.

<b>Manufacturer</b>	<b>Model</b>	<b>Tested</b>	<b>Functional</b>
BTCPower	EVDSP-350-5-120-0-2-C-4-0	11	8
BTCPower	L3S-50-480-01-001	9	8
Efacec	EFAPOWER EV QC 45	19	9
Tritium	TRI93-50-01-US	30	24
<b>Total</b>		<b>69</b>	<b>49</b>

### **-Charging Speed**

The nominal charging speed on most of the chargers tested was 50 kW. There are 10 chargers by BWI Airport and one in Crownsville that are rated at 150 kW. I was unable to confirm the full power delivery performance of those chargers due to the specifications of my vehicle.

### **-Physical Access**

There were two instances during the evaluation where my access to a charging station was obstructed. The first was a gasoline car that had parked in front of one of the two fast chargers in Chesapeake Beach. The signage at that space read, ELECTRIC VEHICLE PARKING ONLY. A new Maryland law that goes into effect on October 1st would prohibit vehicles from blocking EV charging stations. An important proviso of the statute is that a sign designating that charging space must conform to federal and state standards for parking signs and include the amount of the penalty for violations (\$100 fine). The legislature has left it up to the property owner to decide if they wish to post the particular signs that will allow enforcement.<sup>7</sup>

The Whitmore Garage in Annapolis is undergoing renovations that have temporarily routed vehicles through the parking spaces in front of the charging stations. I was able to park close enough to the chargers in both instances to perform a complete evaluation including two minutes of continuous charging. I treated both of these chargers as if they were fully available for the purposes of this evaluation. Both were classified as fully functional.

### **-Follow Up Testing**

I revisited 13 chargers that were classified as less than fully functional. I checked if their condition had changed in the days and weeks following the initial visits and reporting of the issues. In every instance, the chargers were still broken.

In order to achieve a minimum of 97% uptime on an annual basis, a charger must not be down for more than 11 days. Eight of the revisited chargers have already fallen below the 97% uptime threshold since I began this charger evaluation.

### **-Conclusions**

High reliability of public EV charging stations is vital for a positive EV driver experience and to support electric vehicle adoption in Maryland. The Commission's 2019 EV Order requires that the utilities "be responsible for ensuring that public charging stations are working and

maintained in good working order.” It is clear from my perspective as an EV driver that there is much room for improvement.

### **-Suggestions**

I do not have any simple answers to solve these problems. I do sense that they need to be acknowledged and addressed without delay if the EV pilot is going to succeed.

The Commission might consider the following section of the MOU between the City of Baltimore and BGE as a template for a consumer complaint driven accountability process.<sup>8</sup>

*10) In the event that any user of an EV Station lodges a complaint with the City, BGE shall be notified by the City and BGE shall respond to the user, with a copy to the City, within three (3) days after receipt of the complaint. If BGE receives a complaint directly from a user, it shall reply within three (3) days after receipt of the complaint and provide a copy of the complaint and response to the City.*

Another action to consider is to compensate ratepayers for the diminished value of the public charging network when the system falls below a certain uptime. See the “Service Level Failure” section in the Virginia DEQ agreement with EVgo for their statewide charging network.<sup>9</sup>

*Contractor’s failure to achieve the required average 95% Uptime Percentage for the Applicable EV Charging Station Network in a given reporting year shall equate to a “Service Level Failure.” For each Service Level Failure, Contractor shall issue a Service Level Credit to DEQ on Contractor’s next invoice.*

At some point, the Maryland General Assembly may want to consider legislation to amend the COMAR regulations to include specific reliability requirements for electric vehicle charging infrastructure that is installed using public funding. The California State Legislature passed a bill two weeks ago that addresses this issue. AB-2061 would require the California Energy Commission, in consultation with the Public Utilities Commission, to develop uptime reporting standards for EV charging stations by January 1, 2024.<sup>10</sup>

I hope these comments and the accompanying charger evaluation data are helpful to the Commission. Thank you for allowing me to contribute – as an EV driver and ratepayer – to the conversation on public charging station reliability.

Sincerely,

*/s/ Lanny Hartmann*

Lanny Hartmann  
Columbia, Maryland

Notes:

<sup>1</sup> ["A Frustrating Hassle Holding Electric Cars Back: Broken Chargers"](#) New York Times, Aug. 16, 2022

<sup>2</sup> ["EV drivers aren't happy with public chargers, new survey says."](#) Detroit Free Press, Aug. 17, 2022

<sup>3</sup> ["Electric Vehicle Owner Describes 'Charging Anxiety' in DC"](#) NBC News 4 Washington, Sept. 7, 2022

<sup>4</sup> ["Electric cars are doomed if fast charger reliability doesn't get better"](#) Arstechnica, July 13, 2022

<sup>5</sup> ["Die-Hard Tesla Owners Are in a Heated Race—With No End in Sight"](#) Wall Street Journal, May 26, 2022

<sup>6</sup> [Reliability of Open Public Electric Vehicle Direct Current Fast Chargers](#) - Rempel, April 7, 2022

<sup>7</sup> [Maryland § 21-1003.2. Vehicle Laws – Plug-In Electric Drive Vehicles – Reserved Parking Spaces](#)

<sup>8</sup> [Baltimore City DOT MOU- BGE -- Installation of Electric Vehicle Charging Stations](#), Sept. 16, 2020

<sup>9</sup> [Virginia DEQ, EVgo Contract No. 18-01-CP, Modification 3](#), Aug. 30, 2021

<sup>10</sup> [California AB-2061 Transportation electrification: electric vehicle charging infrastructure.](#)

## Appendix A

Station Name	Station ID	Date Tested	Functional	App Status	Issue Description	Reported to SRS Customer Service - Details
Carroll Co. Commissioners	43336	11/12/2022	No	OFFLINE	Offline. Neither card nor app worked. App: "Start Charge Unsuccessful. Unable to use the EVSE, it is in an unknown state." A Leaf driver here told me he couldn't get the DCFC to work and was charging on Level 2 to get home.	Reported via app: Unable to charge, Network Problems - Unable to initiate charging. Tried both the app and RFID card. Charger didn't respond to either.
Howard Co Library - Miller	43335	11/12/2022	No	OFFLINE	No power. Screen is dark	Reported via app: No Power to Station - Station is offline, the screen is dark. See attached photo.
Ripken Stadium - R	43359	11/13/2022	No	OFFLINE	Offline. Neither card nor app worked. Broken latch on CCS connector. App: "Start Charge Unsuccessful. Unable to use the EVSE, it is in an unknown state."	Reported via app: Visible Damage - Station is offline and the latch on the CCS connector is broken off. See attached photo.
Finksburg Library	153033	11/12/2022	No	*Not Listed	Offline. Neither card nor app worked. App: "Get EVSE Stations Unsuccessful. Charge station not found."	Reported via email to SRS: Fast charger does not initiate. Tried both scanning the QR code and a Shell Recharge RFID card. Neither worked.
BCPL Cockeysville - L	153488	11/13/2022	No	*Not Listed	No power. Unit is dark and wrapped with caution tape.	Did not report, presumed that it is a known issue since the station ID is not listed in the app.
HCLS Glenwood - L	153018	11/12/2022	No	*Not Listed	Offline. Neither card nor app worked. App: "Get EVSE Stations Unsuccessful. Charge station not found." Another EV driver told me that she couldn't charge on this station.	Phoned CS. They said there was a note that this unit is due to be replaced. She said that she will put in a note that the power should be turned off to help other drivers know that this is not operable.
HDG City Hall	53381A	11/13/2022	No	AVAILABLE	Error code: Proximity Error1 (on 3 attempts)	Phoned CS. On hold for over 25 minutes. I had already left the station when CS finally answered. CS confirmed that there was already an open case on this station and he said he would update it with my report.
S Carroll Sr CC - R	43395	11/12/2022	No	AVAILABLE	Red indicator ring on vehicle. Charger Error: "Charger did not detect vehicle. Check the connector or the ignition!"	Reported via app: Unable to charge, Other - Got the following message: Charger did not detect the vehicle. Check the connector or ignition!
Howard Comm Coll - R	43371	11/12/2022	No	AVAILABLE	Did not initiate via app or card. App: Start Charge Unsuccessful. Unable to process your request please try again later.	Phoned CS. They could not communicate with the station, said it had network issues and that they would create a case.
BWI Cell Lot - #1	54161	11/12/2022	No	AVAILABLE	Error code: TIMEOUT_INSULATION_TEST	Reported via app: Unable to charge, Other - Could not charge on Nov 12. Error code: TIMEOUT_INSULATION_TEST
BWI Cell Lot - #4	54153	11/12/2022	No	AVAILABLE	Error code: Communication_Failed	Reported via app: Unable to charge, Other - Could not charge on Nov 12. Error code: Communication_Failed
Arbutus - R	153019	11/12/2022	No	AVAILABLE	Start button didn't respond to pressing when blinking	Phoned CS. He restarted the station but the start button wouldn't react. He said he'd put in a report.
Arbutus - L	153034	11/12/2022	No	AVAILABLE	Error code: Err 22. When the start button is pressed it immediately says to return the connector to the holster.	Phoned CS. He restarted the station but it still didn't initiate. CS said there was already an open ticket on this station.
BWI Rideshare Lot - #3	54147	11/12/2022	No	*Not Listed	No power. Screen blank.	Reported via app: (continuation with 54163) Also, station ID 54147 at the same location has no power. Screen is dark.
BWI Rideshare Lot - #6	54163	11/12/2022	No	AVAILABLE	Error code: Proximity Error1, Damaged CCS	Reported via app: Unable to charge, Other - CCS connector is broken. CHAdeMO session does not initiate. Error code: Proximity Error1
MDA HQ Annapolis - R	53378A	11/6/2022	No	AVAILABLE	Error code: Communication_Failed	Reported via app: Unable to charge, Network Problems - Charging failed. Error code: Communication_Failed
S Carroll Sr CC - L	43396	11/12/2022	Low Pwr	AVAILABLE	Low power, 16 kW	Reported via app: Other - Very low changing power. 15.6 kW
HCC A Lot - L	43394	11/13/2022	Low Pwr	AVAILABLE	Low power, 15 kW	Reported via app: Other - Station ID 43394 and 43398 have lower power than is normal. Both charge at only 15 kW. Normal is around 40 kW. See attached screenshots from Shell Recharge app.
HCC A Lot - R	43398	11/13/2022	Low Pwr	AVAILABLE	Low power, 15 kW	Reported via app: Other - Station ID 43394 and 43398 have lower power than is normal. Both charge at only 15 kW. Normal is around 40 kW. See attached screenshots from Shell Recharge app.
2660 Riva Rd - R	43373	11/6/2022	Low Pwr	AVAILABLE	Low power, 15 kW	Phoned CS. Rebooted, but only charged at 15 kW. Created a ticket for low power.
Chesapeake Beach - R	43356	11/11/2022	Low Pwr	AVAILABLE	Low power, 15 kW	Reported via app: Other - Only charging at 15.4 kW.

## Appendix A

Station Name	Station ID	Date Tested	Functional	App Status	Issue Description	Reported to SFS Customer Service - Details
Kenhill Center - R	153020	11/11/2022	Card Only	OFFLINE	Offline - Card only. App: "Start Charge Unsuccessful. Unable to use the EVSE, it is in an unknown state."	Reported via app: Unable to charge, Network Problems - Station offline Nov 11. Unable to initiate charge via app.
Aquatic Center - L	43358	11/12/2022	Card Only	OFFLINE	Offline - Card only.	Reported via app: Unable to charge, Network Problems - Station is offline.
Eastport - R	53197	11/6/2022	Card Only	*Not Listed	Offline - Card only. App: "Start Charge Unsuccessful. Unable to use the EVSE, it is in an unknown state."	Reported via app: Unable to charge, Network Problems - Offline. Station does not initiate via app. Does initiate with RFID card though.
Glen Burnie Garage	153016	11/12/2022	Closed	FAULTED	Faulted since August Temporarily inaccessible. Section of garage is closed. (exempt)	Station has been Faulted since August. Reported via email to BGE that the floor of the garage with the charging stations is closed due to construction.
Whitmore Garage	153025	11/6/2022	Closed	*Not Listed	Station is not listed on app. Temporarily inaccessible. Section of garage is closed. (exempt)	Temporarily closed. All stations at this location have been removed from being listed on app.
Harford County Govt - R	53386A	11/13/2022	See Note	AVAILABLE	Note: Sign covering screen: "CHARGER UNDER REPAIR" However, the charger seemed to function as normal.	Reported via app: Other - Sign says "charger under repair" but it works OK.